- SQL FUNCTIONS –

1. SINGLE FUNCTIONS

Type	Operator	Description
Multiplicative Operator	*	Multiplication
	/	Division
Additive Operator	+	Addition
	-	Subtraction
Relational Operator	<	Less than
	<=	Less than (inclusive)
	>	Greater than
	>=	Greater than (inclusive)
	=	Equality
	!= <> ^=	Inequality
Logical Operators	AND	SELECT * FROM EMP WHERE DEPTNO=10 AND job='MANAGER';
	OR	SELECT * FROM WHERE DEPTNO=10 OR JOB='MANAGER';
	NOT	SELECT * FROM EMP WHERE NOT DEPTNO = 10;
	BETWEEN a AND b	SELECT ENAME, SAL FROM EMP WHERE SAL BETWEEN 100 and 1500;
Concatenation operator	||	SELECT ENAME || ' is a ' || JOB "Employees Details" FROM EMP; →"Scott is a MANAGER" under the nickname "Employees Details.
Number Operator	ABS(x)	Absolute value
	COS(x)	Cosine value
	EXP(x)	e^x (e=2.71828183)
	FLOOR(x)	Abandons decimals
	LOG(x)	Converts to log value
	POWER(m, n)	m^n
	SIGN(x)	returns the sign of an argument. (-1 if x<0)
	SIN(x)	Sin value
	TAN(x)	Tan value
	ROUND(x)	Rounds to the nearest decimal point
	ROUND(x,y)	Rounds x to the y^{th} decimal point
	TRUNC(x, y)	Abandones all values below the y^{th} decimal point
	CEIL(x)	Rounds uup to nearest integer
	MOD(x, n)	Remainder of x/n
String Operator	LOWER(str)	Converts to minuscule letter
	UPPER(str)	Converts to capital letter
	INITCAP(str)	Converts first character to capital and result to miniscules
	CONCAT(str1, str2)	Links str1 and str2 (str1str2)
	SUBSTR(str, starting point, number to extract)	Cut and extracts the characters. If the starting position is negative, count the digits from the end. SELECT SUBSTR ('ORACLE',3,2) FROM DUAL; →AC
	LENGTH(str)	Calculates string length
	INSTR(str, character to find, starting position, number of	How many times the character to find in str is found SELECT INSTR('ABCABC', 'B') FROM DUAL; →2

	occurrences and the number of searches)	SELECT INSTR ('ABCABC', 'B', -3) FROM DUAL; →2
	LPAD/RPAD(str, string length, string to fill it with)	Creates a string of specified length and fills the with the specified character (on the left) SELECT LPAD ('ORACLE', 10, '#') FROM DUAL; →####ORACLE SELECT RPAD ('ORACLE', 10, '#') FROM DUAL; →ORACLE####
	(1) TRIM(str) (2) RTRIM(str) (3) LTRIM(str)	(1) Drops all blanks (2) Drops all blanks at the right side of the string (3) Drops all blanks at the left side of the string
	CHR(str)	
	ASCII(str)	
	REPLACE(str, 'x', 'y')	In the string str, replace all 'x' to 'y'
Date operators	SYSDATE	Current date (SYSDATE+1 = tomorrow)
Converting types	TO_CHAR	0: fill character room even if there are not enough characters SELECT TO_CHAR (123456, '0,000,000.00') DUAL; →0,123,456.00
		9: fill character room with only if there are enough characters SELECT TO_CHAR (123456, '9,999,999.99') FROM DUAL; --123,456.00 →123,456.00
		,: possible every 3 places SELECT ENAME, TO_CHAR (SAL, '$00,999') FROM EMP WHERE ENAME='SMITH'; →$00,800
		.: decimal point
		$: Currency SELECT ENAME, TO_CHAR (SAL, '$99,999') FROM EMP; →$800
		L: Local currency units may be prefixed SELECT TO_CHAR (10000, 'L999,999') FROM DUAL; →₩10,000
	TO_DATE	SELECT TO_DATE ('20220412', 'YYYY-MMDD') FROM DUAL; →22/04/12
	EXTRACT	When you want to convert a year, month or date to a number: SELECT EXTRACT (YEAR FROM SYSDATE) FROM DUAL; →2022

2. GROUP FUNCTIONS

- A group function is a function that brings a single result by applying a function to multiple rows or to all rows in a table.
- SUM, AVG, COUNT, MAX, MIN, STDDEV, VARIANCE
- We use the function GROUP BY, so that only one result is given per group.

```
SELECT DEPTNO, MAX(SAL), MIN(SAL), ROUND(AVG(SAL),2), SUM(SAL)
        FROM EMP
GROUP BY DEPTNO;
```

- We use the HAVING clause to perform conditional comparison with group functions.

```
SELECT DNAME, MAX(SAL), MIN(SAL), ROUND(AVG(SAL),2)
        FROM EMP E, DEPT D
        WHERE E.DEPTNO = D.DEPTNO
        AND SAL <5000
        GROUP BY DNAME
        HAVING AVG(SAL) >=1800
        ORDER BY AVG(SAL);
```

- The TOP(n) can be used to limit the number of rows returned from ordered sets of data in SQL.

```
SELECT TOP(3)
        ENAME, SAL,,EMPNO
        FROM EMP
        WHERE SAL >1000
        ORDER BY SAL;
```